3.2 Using Parallel lines and transversals

Conclusions:

Postulate 15 Corresponding Angles Postulate corr. ∠s post.

If two parallel lines are cut by a transversal, then each pair of corresponding angles is ≅.

Theorem 3.1 Alternate Interior Angles Theorem

If two parallel lines are cut by a transversal, then each pair of alternate interior angles is ≅.

Theorem 3.2 Alternate Exterior Angles Theorem

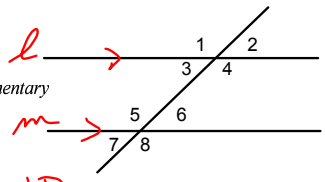
If two parallel lines are cut by a transversal, then each pair of alternate exterior angles is ≅.

Theorem 3.3 Consecutive Interior Angles Theorem

If two parallel lines are cut by a transversal, then each pair of same-side (consecutive) interior angles is supplementary.

Let's prove Theorem 3.3

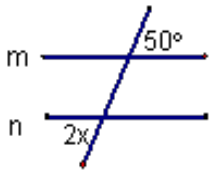
Given: l || m
Prove: $\angle 3 and \angle 5 are\_supplementary$



Statements	Reasons
① $l \parallel m$	① Given
② $\angle 1$ & $\angle 3$ are alt. int.	② def of ∠ P.
③ $\angle 1$ & $\angle 3$ are suppl	③ ∠ PP
④ $\angle 1 \cong \angle 5$	④ Corr. ∠s post.
⑤ $m\angle 1 + m\angle 3 = 180$	⑤ def of suppl.
⑥ $m\angle 1 = m\angle 5$	⑥ def of ≅
⑦ $m\angle 5 + m\angle 3 = 180$	⑦ Subst
⑧ $\angle 3$ & $\angle 5$ are suppl.	⑧ def of suppl.

Solve for x and/or y.

m || n

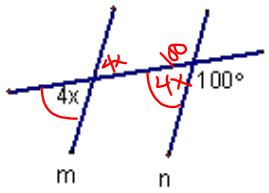


$2x = 50$

$x = 25$

Solve for x and/or y.

m || n

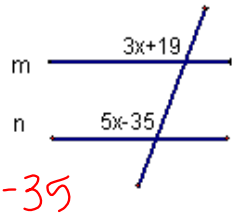


$4x+100=180$

$x=20$

Solve for x and/or y.

m || n

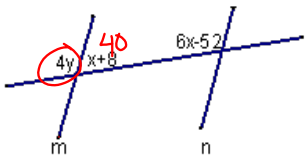


$3x+19=5x-35$

$x=27$

Solve for x and/or y.

m || n



$x+8+6x-52=180$

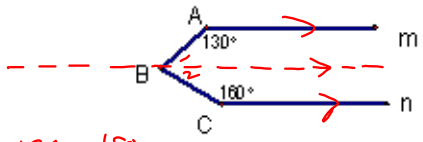
$x=32$

$4y=140$

$y=35$

Find the $m\angle ABC$

m || n



$m\angle 1+130=180$

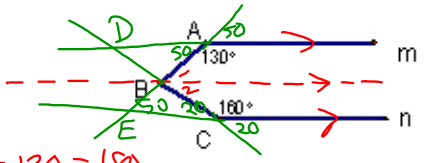
$m\angle 1=50°$

$m\angle 2+160=180$

$m\angle 2=20°$

$m\angle ABC=70°$

Find the $m\angle ABC$ **m || n**



$m\angle 1 + 130 = 180$

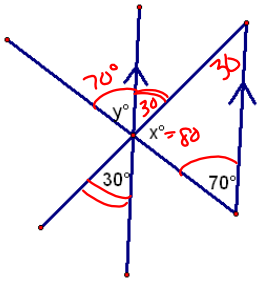
$m\angle 1 = 50°$

$m\angle 2 + 160 = 180$

$m\angle 2 = 20°$

$m\angle ABC = 70°$

Solve for x and/or y.



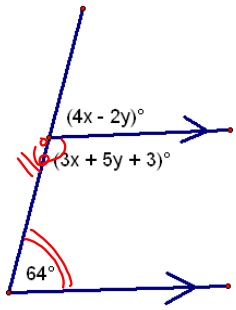
Solve for x and/or y.

$4x - 2y = 64$

$3x + 5y + 3 = 116$

$x = 21$

$y = 10$



HW

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